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ABSTRACT

Although the value of play in child development has been questioned in the past, it is now widely accepted that high-quality play environments and time for play are essential in the educational and developmental program for young children. Each school needs a master plan for developing school playgrounds: a plan that pays special attention to site features, the age groups to be served, the number of children, and the children's special needs. Selecting playground equipment is also an important task. The United States Consumer Product Safety Commission's "Guidelines for Public Playground Equipment" (1991) are the most authoritative source on playground equipment safety and should be used for equipment selection and maintenance recommendations. The school system administration should assume all responsibility for approving playground site plans and purchasing and installing playground equipment. Once playgrounds are open, the equipment should have constant, systematic inspection and maintenance. All teachers, custodial personnel, and maintenance personnel should receive annual training on playground maintenance. Because the teaching staff at each elementary school are responsible for supervising play, they should receive regular in-service training on playground supervision. Playground design should integrate disabled children. Consideration of mobility, accessibility, play options, and materials that stimulate the senses should be incorporated into the process of planning for playgrounds. (MM)

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PLAYGROUND DEVELOPMENT GUIDELINES FOR SCHOOL SYSTEMS

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Throughout the history of education in the United States, many have doubted the value of play in child development, labeling it a frill, a waste of time, or unimportant in the educative process. However, over the past two decades, an impressive array of evidence for the value of play has accumulated. It is now widely accepted among professionals that high quality play environments and time for play are essential ingredients in an educational/developmental program for young children.

A sampling of the research (adapted from Frost, Bowers and Wortham, 1990; Frost, 1992) on the value of play in child development follows:

> Sources reveal that play promotes cognitive development (Sutton-Smith, 1967, 1977; Piaget, 1962; Saltz & Brodie, 1982; Fein, 1979; Saltz, 1980; Bruner, 1972; Bruner, Jolly & Sylva, 9176). Play promotes social development (Shure, 1981; Ladd & Mize, 1983; Eisenberg & Harris, 1984) and leads to discovery, verbal judgement and reasoning. It is also important in developing manipulative skills, imaginative art, discovery, reasoning and thought (Isaacs, 1933; Pepler & Ross, 1981). Play with objects results in divergent production or expands uses for objects (Sutton-Smith, 1968; Goodnow, 1969; Dansky, 1980b) and improves problem-solving (Sylva, 1977; Smith & Dutton, 1979; Dansky & Silverman, 1973; Eisenberg & Harris, 1984). Play enhances language (McCune-Nicolich, 1981; Schirmer, 1989).
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> Culture arises in the form of play (Huizinga, 1950). From a therapeutic perspective, play is a means for overcoming fears (Klein, 1932; Isaacs, 1933; Axline, 1947; Erikson, 1950). Motor abilities are formed through play (Bennett, 1980; Seefeldt, 1984; Staniford, 1979) and playgrounds enhance motor development (Gabbard, 1979; Myers, 1985).
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> Play training for children enhances imaginative play (Smilansky, 1968; Feitelson & Ross, 1973; Smith & Sydall, 1978), enhances creativity (Feitelson & Ross, 1973; Dansky, 1980a), enhances language development (Vygotsky, 1967; Lovinger, 1974; Saltz, Dixon & Johnson, 1977), and enhances group cooperation (Rosen, 1974; Smith & Sydall, 1978). Finally, play training for teachers improves their interaction with children during play (Busse, Ree & Gutride, 1970; Wade, 1985).

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Anecdotal and time sampling studies of carefully planned, extensively equipped playgrounds by graduate students and faculty at the University of Texas show clear advantages over traditional playgrounds (Frost and Campbell, 1985; Moore, 1992; Yeatman and Reifel, 1992).

- More types of social interaction
- Greater frequency of social interaction
- More use of language
- Greater variety of language communications
- More dramatic and construction play
- Higher quality of dramatic play
- Greater variety of play themes
- More object transformations
- More environmental transformations
- Greater duration, persistence and continuity of play and play themes
- Reduced non-occupied and aggressive behavior

Children in free, undirected play do learn, they progress through play from a state of ignorance to a state of knowing. They learn new information, new skills, social rules, and they develop internal models that facilitate later learning. Given this rapidly accumulating body of research on the value of free play (recess) in imaginative play environments, play time should not be abandoned or replaced by formal, structured activities.

PLANNING PLAYGROUNDS

The first step in developing school playgrounds is the development of a master plan for the individual school. Each physical site is different, requiring special attention to surface features (slopes, ditches, ground cover, proximity to streets, etc.). In addition, age groups to be served, numbers of children, and special needs of children (e.g., handicapping conditions) must be considered.

Preparing the Site

Whenever possible and when reasonable safety can be assured, the natural features of a site should be preserved. Except for space for buildings and organized games, trees and grass should be preserved to provide shade and attractive ground cover. All utilities, both underground and above ground, should be identified to ensure that equipment and play zones do not conflict with utilities.

The plan for a specific school site should include any proposed landscaping to allow examination and approval by the central authority before any site changes are made. Earth work (berms, etc.) should complement normal play and be constructed for safe child movement and play. Plants should be hardy and non-toxic.

The space selected for play equipment should be well-drained and level or near level to accommodate the large surrounding fall zones or resilient surface areas (sand, pea gravel, shredded wood). Many areas of standing water can be corrected by filling the area with dirt so that water drains naturally.

Planning the Playground

If the proposed play area is adjacent to a busy street or natural hazards such as deep water or deep ditch, a fence (minimum five feet high) should be provided. Plants may be planted along the fence to overcome the barren effect.

Storage facilities adjacent to the playground are needed for younger children (preschool - early primary) because much of their play revolves around loose or portable materials. Storage is also needed to house the wheel vehicles (tricycles, wagons, etc.) essential for their make believe and motor play.

Generally, two major play areas are needed for each school, one for preschoolers (ages 3-5) through first or second grade and another for second grade through elementary (grades five to six). A separate play area is needed for infants and toddlers.

Ideally each playground will be located near the classrooms of the age groups using the playgrounds. A growing number of playgrounds, especially for younger children, are sufficiently close to the classrooms to allow integration of curriculum/activities between indoors and outdoors. It is best to design playgrounds as buildings are designed to facilitate this integration.

The playground for younger children should include: a site with trees and other natural features; a storage facility linked to wheel vehicle paths; a complex super-structure scaled to accommodate the age group; swings with different types of light-weight, resilient seats; sand play areas (shaded); access to water and toilets; special pretend play and motor play attractions such as cars, boats, see-saws, trapeze bars, etc. A small hard-surfaced area is needed for early stages of organized games (bouncing balls, etc.).

The playground for older children (upper primary/elementary should include a complex super-structure with a wide range of motor functions, swings, and related motor apparatus (parallel bars, chinning bars, etc.). This playground should also include basketball/volleyball courts, and softball/football/soccer fields.

The best playgrounds for all ages include areas for water, plants and other natural features. They should be beautiful as well as functional. Playgrounds should not be considered "finished"

at any point, but evolving as both children and adults participate in their creation. The best playgrounds go well beyond the typical arenas of manufactured equipment and games areas to incorporate cultural/historical materials and activities, for play carries cultural genes—the culture is passed on through play.

SELECTING EQUIPMENT

Two factors are fundamental in selecting playground equipment; play value and safety. Play value refers to the degree to which the equipment matches the developmental needs of the children. Pre-school children engage in motor play, pretend play and construction play. By first grade they are also including organized games into their play. The developmentally appropriate playground includes areas, materials, and equipment to accommodate all these forms of play. In addition, the social play activities of different age groups must be taken into account; spaces and materials for solitary play and spaces and materials for group play. The key element in selecting equipment for play value is ensuring that equipment is available to accommodate all the natural types of play engaged in by the intended child audience.

Selecting reasonably safe play equipment is particularly difficult for unskilled adults, because the playground equipment industry makes available to the public a wide array of equipment ranging from extremely hazardous to reasonably safe. The United States Consumer Product Safety Commission's (CPSC) Guidelines for Public Playground Equipment (1991) are currently the most authoritative source on playground equipment safety and should be used for equipment selection as well as for maintenance recommendations. The American Society for Testing and Materials (ASTM) published national standards for playground surfacing in 1991 and is expected to publish national standards for playground equipment in 1993. Efforts are being made to coordinate CPSC guidelines and ASTM standards. The school system will revise equipment selection and maintenance criteria as national criteria are established.

Wood vs Metal Equipment. Both wood and metal equipment are available from national distributors. Custom builders use wood almost exclusively. With careful attention to design, construction and installation, both types can be reasonably safe and have high play value. Some prefer wood for its' aesthetic qualities but may be concerned because of potential splinters. Bare metal or painted decks and slides should be avoided because of the potential for burns. If present, such areas should be shaded. The newer powder coated, vinyl-clad or plastic components preclude serious burns. Metals should be aluminum or galvanized steel for durability. The high per pound market value of aluminum make it a growing target for theft. Because of the conflicting claims of playground industry representatives, the school system should be cautious in equipment

purchasing. One level of protection is the use of high quality criteria in the bid process and/or consulting with independent playground equipment professionals.

Surface Material. About 60-70 per cent of all playground injuries result from falling onto surfaces (ground cover or peices of equipment). About 90 per cent of serious injuries result from falling onto hard surfaces (CPSC, 1990). Consequently, all climbing and moving equipment must be installed over resilient surface materials. Those tested and approved by the CPSC are sand, pea gravel, shredded wood and manufactured materials. If loose materials (sand, pea gravel, shredded wood) are used they must be secured under and around the equipment by retaining walls (timbers or concrete) and maintained at 8"-12" depths. Providing extra depth at high impact areas (exits of slides directly under horizontal ladders and under swings) by excavating extra base material helps to compensate for rapid dispersal or shifting of resilient materials. The school should study the effects of drainage and climate and check availability and prices of surfacing materials before final decisions are made.

EQUIPMENT INSTALLATION

Selecting safely designed equipment is only the the first step in ensuring safety. Well-designed equipment can be made hazardous by improper installation. The School System administration should assume all responsibility for installation of playground equipment. Typically, installation will be conducted under the supervision of an installer with experience in installing the equipment that is purchased. The School System should confirm expertise of the installer with the manufacturer and secure the manufacturer's formal acceptance/confirmation of installation in conformance with manufacturer's printed instructions upon completion of the project. Final acceptance of the installation (in writing) should be secured before the playground is opened for school or public use.

PURCHASING EQUIPMENT

The School System should be responsible for approving all playground site plans and for purchasing all playground equipment. Requests for purchase should include:

1. A site plan or scale drawing illustrating proposed location of all equipment and site modifications. Proposed landscaping, planting of trees and shrubs, including desired types should be included.

2. A description of proposed equipment (e.g., sketches, drawings, photographs, manufacturers designers/models) should be included along with name, address, phone number of designer/builder or manufacturer, catalog numbers and list prices.

3. A list of potential bidders who design, build or manufacture equipment of the type being requested (include names, addresses, and phone numbers). The School System should prepare all bid specifications and assume responsibility for advertising and approving/rejecting bids and for installation of equipment in keeping with School System policy and State laws.

PLAYGROUND MAINTENANCE

Once playgrounds are opened for school and/or public use, the important task of maintenance begins. Not unlike other equipment for extensive use, playground equipment requires constant, systematic inspection and maintenance. A maintenance checklist, referenced to the existing CPSC guidelines and/or ASTM standard should be used. This checklist should be updated with each revision of the national guidelines/standards.

All teachers, custodial personnel and maintenance personnel should receive annual training on playground maintenance. Teachers should be alerted to observe for maintenance needs whenever they are on the playground. All maintenance needs should be reported promptly to the school office. Systematic records should show nature of defect, date, disposition or correction of defect, date, and names of parties reporting and correcting the defect or maintenance item. The school Safety Officer or designated safety inspector should make careful inspections of all playgrounds at least once a month (more frequently if conditions such as vandalism are present). Records should reflect the result of inspections, dates, and nature and dates of correction, with names of personnel involved.

SUPERVISING THE PLAYGROUND

The teaching staff at each elementary school, under the direction of the school principal, are responsible for supervising play. Teachers should receive regular inservice on playground supervision to help ensure that safe practices are followed and that children learn and develop through play. The playground supervisory roles includes:

1. Maintaining proper child/adult ratios on the playground. This is generally considered to be a ratio no greater than that for in-classroom instruction.
2. Interacting with children to ensure they are familiar with safe play practices and with fundamental playground maintenance needs. Children may assist in maintaining their own playground through such activities as raking sand, picking up trash, etc.
3. Moving about the playground to assist and encourage children without unduly interfering with their play.
4. Observing children at play to detect potential safety hazards and to identify children who have needs that warrant special help or correction.
5. Establishing with children minimal policies, rules, or guidelines for play. For example:

    We do not throw sand or pea gravel.
    We do not push others off equipment.
    We do not climb on top of side rails, horizontal ladders or other devices not designed for such purpose.
    We report broken equipment.
    We help keep our playground safe and clean.
    We help one another play safely.

SAMPLE BID SPECIFICATIONS

Sample specifications for contemporary playground equipment are found in the Iron Mountain Forge, Landscape Structures, Inc., and Kompan, Inc., catalogs or accompanying materials. Prospective purchasers commonly select a set of specifications provided by manufacturers that address the type of equipment to be purchased. It is common courtesy to call the manufacturer or manufacturer's District Representative to secure approval to use these specifications. Great care should be taken to select a set of specifications that are specific, yet comprehensive, and that address the guidelines/standards of the American Society for Testing and Materials, the U.S. Consumer Product Safety Commission Guidelines and other relevant standards.

In order to allow bids by various qualified manufacturers, each specification cluster should contain an adjacent blank space for "proposed modifications." This will allow all qualified bidders to bid. The School District (purchaser) then decides whether the modifications are of equivalent quality with respect to the original specifications.

INTEGRATING PLAYGROUNDS

The Americans with Disabilities Act (P.L. 101-336) provides that no individual shall be discriminated against in the equal enjoyment of any place of public accommodation. This principle should apply to public playgrounds. There are many types of disabilities so schools must adapt to individual circumstances and needs. The following guidelines are pertinent for several types of disabilities.

- Mobility. A route or paths should be provide for moving about the playground. Children in wheelchairs should not encounter barriers which prevent access to the play equipment. A continuous path not exceeding 1:20 in slope should connect all major play areas. Ramps should not exceed 1:12 in slope.

- Accessibility. Paths to accommodate wheelchairs, tricycles and other wheeled vehicles should allow children to access the different zones of the playground. Play structures and play areas should be accessible. A range of access routes may include:
  - ramps for access onto equipment by wheelchairs.
  - transfer points or specially designed decks and railings for transfer out of wheelchairs and onto equipment.
  - resilient surfacing under and around equipment that will support wheeled vehicles (e.g., wood mulch, manufactured surface materials).

- Play options of each type used. For example, if several swings are available, at least one should accommodate children with disabilities. It is not reasonable to make every single play option accessible, because of inherent challenges and hazards.

- Proximity to other children so that social interaction can occur.

- Sensory rich materials. A variety are needed to stimulate and entertain children across a range of disabilities, e.g., visual, hearing, mental, physical. The needs of each group must be studied carefully before designing the play environment.

- Challenges. Difficulty levels should be designed to ensure that the developmental needs of all children are met. Every child should be challenged but "safe" challenges for some children may be hazards for children with disabilities. Beckwith (1991) proposes that the route of travel to a play option should be approximately equal in difficulty to the challenge presented by the play option (e.g., slide). In other words if

the child can successfully negotiate his way to the play option he can use it successfully.

- Play leaders. Adults with special skills are needed to provide for the needs of children with specific disabilities, e.g., spina-bifida, partially sighted. Providing for children with disabilities goes far beyond the mere provision of access for wheelchairs. Most children with disabilities do not use wheelchairs. All adults who supervise these children during outdoor play should receive special training for that purpose.

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